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Procedia - Social and Behavioral Sciences 74 (2013) 438 – 447

Procedia
Social and Behavioral Sciences

26th IPMA World Congress, Crete, Greece, 2012

Success Factors in the Management of Investment Projects: A Case Study in the Region of Thessaly

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Abstract

This research was focused on the theoretical background and on administrators' experience of investment projects in the post delivery stage to develop a multidimensional framework of critical success factors, which will be applied before the project' implementation to provide guidance to managers to make strategic decisions and choices. The survey was conducted concerning small industries which process and sell agricultural products, having implemented projects in Co-funded Program. The findings of the qualitative analysis are summarized in a table of CSF that can be applied to all investment projects, and can be used from different stakeholders to lead projects to success.

Keywords: Success; failure; success criteria; critical success factors; investment projects; co-funded support programs; Measure 2.1 Reg 1257/99

1. Introduction

The business environment as it is formed both in Greek and international level is complex, complicated, and dynamically changing (Canels *et al.*, 2011). Despite the numerous changes that take place, the purpose of each business unit is to ensure a sustainable development path through a business strategy. The decisions which are taken by enterprises' administrators are aligned with enterprise's strategy. The strategy is formatted in a portfolio of projects which ensure the success of business operation. Projects are not always implemented successfully. Business units' owners implement projects or their own resources or by the assistance of Co - Funded Programs. In Greece, many of the projects are implemented in Co - Funded Programs. The regulation 1257/99 of 17 May 1999 is a Rural Regulation

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doi:10.1016/j.sbspro.2013.03.032

and Co-funded Program that took place in Greece in Second Community Framework in period of 2000 - 2009. The primary goals of the Program were to improve the competitiveness of the enterprises that process and sell agricultural products. Within this research are investigated ex-post (two to five years after the completion of the projects) the critical success factors of investment projects were implemented under the Regulation 1257/1999 according to the view of the administrators of the projects. The research consists of twelve (12) administrators of projects from enterprises. The scope and activity of the enterprises is different. The paper is structured in three sections. Initially the theoretical background around the project success, success criteria and CSF on investment projects was searched. Afterwards was presented the research questions and the methodology that was applied, and finally are analyzed the research findings that were gathered from the survey that was carried out.

2. Background and Literature Review

The success of projects is a field around which a wide range of theories have developed. In order to define success it is necessary to clarify: **a)** exactly in which moment of the life cycle of the project the success is perceived and **b)** the stakeholder who judges the outcome of the project. Most of researchers confuse the concepts that are related to the success of a project: a) the project success, b) the project success criteria and c) the critical success factors. Turner (2007) notes that first of all the critical success factors were introduced, then frameworks of success were developed and finally models of success were formed. Consequently, there are distinct differences as analyzed in the concepts below:

2.1. Project success

The first attempt to define success was carried out in 1960 (Kernzer, 2001) associated with the achievement of the "traditional gold triangle": **a)** the time **b)** the budgeted cost and **c)** the designed quality and performance of project deliverables and restricted in this frame for many years (Dvir *et al.*, 1998, p.917; Mahaney & Lederer, 2010; Meskendahl, 2010). Gradually the success was redefined and associated with concepts as: the effectiveness of administration of project management processes, the customers' satisfaction of project's deliverables, the creation of adding value to the enterprise (Freeman & Beale, 1992, cited by Belout, 1998), (Jonas,2010), the meeting of stakeholder's satisfaction and the achievement of scope of the project (Lock, 2007). Common basis to all the above approaches is the correlation of success with the unit of time, discriminated in micro level (during the development of project) and macro level (after the completion of the project). IPMA (2006) assesses that success is met in a proper evaluation of project deliverables and the completion within the required timeframes and within available financial resources. Each stakeholder's judgment to the deliverables of the project is not of equal importance and differences exist between the stakeholders' crisis to project success (Baker *et al.*, 1983; Geraldi *et al.*, 2010). Of paramount importance to success' judgment is the views of three main stakeholders: project's owner, project's administrator and project's end user - client (Kerzner, 2009). Reaching current theories about project success, coincides with the selection of the appropriate management practices throughout the project lifecycle (Savolainen *et al.*, 2011).

2.2. Criteria of project success

Success criteria are dependent variables that are used as measures in order to evaluate the project's success.The criteria can be divided into categories such as: subjective and objective, measurable and non measurable, quantitative and qualitative. The initial classification of success criteria was identical to the gold triangle. Some time afterwards the success criteria were separated into micro and macro level

(Eriksson & Westerberg, 2011; Alam *et al.*, 2008; Toor & Ogunlama, 2010). In the micro level the criteria were the same as the dimensions of the gold triangle (time, cost, quality). Macro level criteria were equivalent to concepts such as project's client, stakeholders' satisfaction (Muller & Turner, 2010), and the market share which the enterprise reserves. Adhazie *et al.* (2008) point out the success criteria for inclusion in non-tangible variables such as: a) the adherence to the agreed level of safety in project, b) the use of high technology specifications equipment, and c) the level of risk control during the project. In contrast Thomas and Fernandez (2008) distinguishes success criteria by: a) the perspective of Project Management, b) the perspective of a technical assessment, and c) the operational level. The first category includes continually tracking of time, budget, satisfaction of the project sponsor, client and other stakeholders. The second category includes criteria as customer's satisfaction in terms of technical specifications of the deliverable of the project. In the operational level are involved criteria such as: business continuity and sustainability.

2.3. Critical Success Factors

Critical Success Factors (CSF) are classified as inputs, distinct characteristics and conditions which, in the appropriate environment, interact as independent variables and play an important role in project success. The influence of each CSF acquires a different significance depending on the phase of the project lifecycle. CSF have been divided in subgroups as: **a)** general classification, **b)** frameworks of CSF, and **c)** models of CSF.

General classification of CSF (related to the internal and external environment)

Initially CSF was related to concepts such as size of project, the skills of the manager (Belassi, 1996), (Hyvari, 2006) and the size of the organization. Turner and Muller (2007) add as CSF: the type of project to be implemented, the urgency the project takes for the organization, and the extent of the deliverables of project to be applicable. These concepts as Papke *et al.* noted (2010) can be divided into factors related to internal and external environment of projects. The time available for the implementation, is a factor that plays an important role in the success (because it affects the relationships between the project team. Rubin and Seeling (1967) introduce as fundamental in project implementation the compliance with the project's quality technical specifications. In another effort, Sayles and King (1971) suggest as CSF: a) the existence of managerial capabilities from the project manager, b) the project's implementation within schedule, c) the application of monitoring, risk and control system, and d) the proper allocation of responsibilities within the project. Baker *et al.* in 1983 include a list of CSF as: a) the development of project scorecard, b) the selection of skillful administrator, c) the adequate funding of the project, d) the detailed allocation of resources, e) prior risk identification in the project, f) the existence of planning and monitoring tools, and h) effective communication in project team. Khan and other academics in 2003 set as a prerequisite for project success: a) the development of flexible planning mechanisms, b) the integration of change systems, and c) the selection of a competent team. Diallo and Thuillier (cited by Ika *et al.*, 2010) focus on two CSF which are the confidence and the communication between stakeholders.

Frameworks success factors

Wit (1988) considers necessary the introduction of a framework of CSF which is created due to the multiple parallel objectives that set the organization during the project lifecycle. The objectives are conflicting because the stakeholders have different criteria of project success. The framework presents CSF that interact with project success as: a) the time dimension, b) the environmental dimension, and c) the dimension of changing the project objectives during project lifecycle.

Models of success factors

A different interpretation to the success brings to the surface the models of success. Pinto in 1989 gives a different interpretation to success, introducing a model which came up from the observation of the repeatability of CSF in projects that were successfully completed as follows:

- Mapping from the beginning of the project's vision,
- The continuous support from the top management,
- The development of detailed plans and timetables,
- The communication between the project manager and the customer,
- The selection of a highly skillful trained project team,
- The use of high technology equipment in the project in terms of technical excellence,
- The degree of acceptance of the project's deliverable to the customer,
- The formation of control system to the process running the project,
- The ability to manage changes, crises and deviations during the project's lifecycle.

Having made the differences distinct among the concepts of success, success criteria and CSF from the theoretical background and pass to the practical level.

3. Research Approach and Methodology

The connection between theoretical background and practice occurs through: **a)** the careful selection of the subject of research, **b)** the use of widely recognized methodological tools, **c)** the use of secure data process collection, and **d)** the adherence of ethics in the research. The methodology was used, works in a combined exploratory and explanatory motive (Saunders *et al.*, 2009). The research findings were made through a double design: **a)** extensive and thorough investigation to theoretical approaches of project success, success criteria and critical success factors, **b)** collection and analysis of primary and secondary data of case studies which composed the research data in order to detect the most important CSF. The combined use of primary and secondary data, was chosen in an effort to clarify a framework of CSF in investment projects through research questions. Productive methodology was considered appropriate to demonstrate the cause - effect relationship between the success of investment projects and the theoretical background as far as it concerns success. The primary data were taken by the responses of twelve project managers of investment projects (in manufacturing companies), to semi-structured/non-standardized interviews around the implementation of the projects in the Co-Funded Program of Regulation 1257/99. The secondary sources consist of officially published private documents of the case - studies related to the management methodology and the implementation of the projects. The documents cover the entire duration of projects and demonstrate how the projects come to success or failure. These documents are: a) the submission of application to join the project, b) the monitoring of investment project, c) the decisions that indicate the intermediate and final completion of the project and d) the decisions that indicate the payment of the investment project. The validity of the data was crossed by the method of triangulation, (Zafeiropoulos, 2005).The managers' responses were crossed with the secondary data (officially published private documents concerning the projects) by checking the economic data of the projects as these were published after projects' completion to the Regulation 1257/99 in the use of sustainability indicators. The sustainability indicators for checking projects' viability were introduced by the Co - Funded program in order to ensure the regulation that the projects were implemented in will be completed successfully.

The choice of the subjects was strategically selected because of the small size (Saunders *et al.*, 2009), twelve case-studies of investment projects considering the owners of the investment projects, would give responses to fundamental research questions around success criteria, project success and the most

important critical success factors (Mason, 2002). In the research, the anonymity and ethics around the faces of the interviewees was reserved. All the projects took place in the four prefectures of Thessaly. The common place in all the studies is that the project's owner and the project's manager is the same person who access the success of the project. In the table below are given some information with regard to the scope of the investment projects and the time that projects needed to be implemented.

Table 1. Sample of the twelve (12) case studies of integrated investment projects under Measure 2.1 of Reg. 1257/99 that have been investigated in the research

S/N	Scope of the investment project	Period from the approval to the implementation of the investment plan
Case Study A	Modernization of building facilities for hygiene and modernization of enterprise' machines in order to supply ISO & HACCP	13/06/2005 – 18/09/2009
Case Study B	Modernization of enterprise' machines which produces salads	10/10/2002 – 10/10/2008
Case Study C	Modernization of machines of a dairy product company	13/09/2002 – 27/04/2005
Case Study D	Modernization of a pickles' production company	08/10/2002 – 08/10/2008
Case Study E	Installation of a waste of oil system of an oil productive company	24/07/2002 -24/07/2006
Case Study F	Installation of waste system and modernization of a dairy products company	21/06/2005 – 31/03/2009
Case Study G	Modernization of a canning plant	17-10-2001 – 01/09/2006
Case Study H	Modernization of machines of wine production company	8/10/2002 - 20/09/2008
Case Study I	Complete modernization of plant that products and process meat	21/06/2005 – 21/06/2008
Case Study G	Modernization of refrigation and packaging unit	20/04/2005 – 20/04/2007
Case Study K	Modernization of a unit which produces dairy products	25/07/2002 – 31/03/2009
Case Study L	Establishment of a unit cutting production of meat	13/06/2005 – 26/01/2009

The average duration of the experience of the projects' managers in the managing of the business itself is 8 years approximately while the average duration in the managing of their projects comes to 18 years. The budget of the projects defines the degree of complexity of the project. Up to a scale of 1-3 we can say that the projects with a budget of up to 1,500,000 euros equals to 1. Projects with a budget from 1,500,000 to 3,000,000 euros equals to 2 while the investment projects of more than 3,000,000 euros equals to 3. Seven out of the twelve projects were in scale 1, three of them were in scale 2 and the remaining two were in scale 3. The emergency degree can be categorized in a scale of 1-3, 3 being the most urgent. Eleven out of twelve projects were in scale 3 while the remaining one was in scale 1.

4. Data analysis and results

In the process of research a pattern of qualitative analysis was developed (deductive approach), starting from the theoretical framework of success, success criteria and CSF of projects, and then followed structured explanatory analysis (explanation building) (Saunders *et al.*, 2009). Primary (the responses of non-standardized interviews managers of investment projects) and secondary data were compared with the theoretical background. Conducting in depth analysis developed the following structure:

- Collection of secondary data from twelve (12) case studies that composed the sample as the first level of preparation for conducting qualitative data analysis,

- Gathering of primary data through twelve (12) non-standardized interviews of investment administrators as case studies,
- Analysis of primary and secondary data in a parallel way,
- Mapping hierarchically according to managers' responses and the theoretical background of the most important CSF,
- Comparison of the views which express the primary data and the views of the theoretical background about the CSF of investment projects (Zafeiropoulos, 2005) and detection of the interactions between the CSF in the definition of project success.

Therefore a combinative pattern of qualitative data analysis is applied in order to interpret the research findings in an optimal way. The researcher was based on the theoretical background of CSF, developed a framework divided into three main sections around success (what is perceived as project success, the success criteria as indicators that measure project success and CSF) and under this framework carried out semi-structured interviews (Mason, 2002). The fundamental research question is broken down into three specific research sub-questions and the interviews have the following structure: a) General demographic data of the interviewees, b) Definition of success or failure of the investment project and the criteria to be determined according to the interviewees, c) Detection of CSF correlated with the external and internal environment of the project according to the interviewees, d) Lessons learned from the implementation of the investment projects. Each interview was conducted by the researcher in thirty minutes of an hour. The number of the semi-structured interviews was sufficient and caused saturation in research, because after this number of interviews, the findings were repeated and allow the researchers to make generalizations. The data collection and analysis process prevent the creation of logical gaps, inconsistencies and errors in the data interpretation. Also the sample analyzed is distinguished by homogeneity, because was consisted solely of managers of investment projects in the Manufacturing Sector. Note the important points of the survey as follows: a) Recording and grouping of the data, b) Identification of relationships between case studies, interviews and the theoretical background, c) Data explanation and interpretation as reported to the published private documents of the research.

Case studies

The research is of exploratory and explanatory nature and in order to investigate CSF, from the taken sample of twelve (12) case studies of investment projects (Zafeiropoulos, 2005, p.176). This method was selected for in-depth analysis of each case, each enterprise invested by making modernizations and expansions of units through projects in the Co - Funded Regulation N.1257/99. The choice of more than one case study is used in order to allow generalization of the research findings in other investment projects either developed under-co financed programs or not (Saunders *et al.*, 2009, p.146). The thorough investigation of each case study made the use of multiple sources as semi-structured interviews of managers of projects and secondary data of each project obligatory. Responsible for the monitoring of the investment projects was the Ministry of Agriculture. The investment projects were implemented in the secondary sector from 2000 - 2009 in the Region of Thessaly.

Secondary Data

The first phase of research included the collection of secondary data. The data around the implementation of projects included: the object of the investment, the duration, the planned budget, the final deliverable's quality, the time and the area the project took place (Saunders *et al.*, 2009). The data were additionally elaborated to the basis of clarification from the managers, through semi - structured interviews. The secondary data included written documents demonstrating the management method of project in its lifecycle (Business Plans, Decisions and Approvals of integration, Decisions of changing plans of project's natural and financial aspects, Reports of Audit of Project Control Institutions, and

Integration Decisions) and published evaluations. It is a clear rationale for the use of secondary sources of investment projects due to: a) the download speed, b) the saving of resources, c) the ease of access in data, and d) the validity, reliability and general acceptance due to the formality of the documents.

Semi - structured/ non - standardized interviews

In the direction of the investigation of the exploratory and explanatory motive, twelve (12) semi-structured interviews were conducted. This method was followed because in research was considered of paramount importance to record the critical success factors focusing on their gravity inside the project, through project managers' responses in interviews, based on their experience. (Saunders *et al.*, 2009). Furthermore, qualitative research is characterized by directness and becoming familiar with respondents for deeper search for CSF (Zafeiropoulos, 2005). The interviews were conducted in a non - standard way in order to let project managers to reveal CSF other than those mentioned in the literature review. Eight of them were conducted face to face between researcher and observer and four by telephone. The duration of research covered a one month period (October 2011) and the place where the interviews were taken was the researcher's workplace. It is important to note that the interview (due to the specialized topic of research), the managers' schedule, and the high project managers' educational level, set as a prerequisite, excellent preparation before the conduction of the interview. The collection of secondary data was important, in order to gather information about of each project. Preparation before the interview helped in obtaining accurate responses by project managers. Interviews moved to three sections of theoretical background, project success, success criteria and CSF that affect project success. It is important to be noted that before the conduction of the interviews, the researcher codified the projects in a scale from 1 to 3, depending on their complexity according to the project's budget and the according to degree of emergency was given to the project.

Triangulation Method

Because of the multiple theories to project success, the method of triangulation was used (Zafeiropoulos, 2005). The process relates to intersection and comparison of findings theoretical interpretations with the findings of qualitative research (the responses of the semi-structured interviews of case - studies and the official data of investment projects in order to accept or not existing theoretical framework (Mason, 2002). Furthermore considering the repeat of participation in the measure under this Regulation, success and CSF were checked their sustainability by indicators as result of the financial data obtained of investment projects (after their completion). This method brings multiple advantages such as: a) to ensure validity and generalizability, b) to achieve data accuracy, and c) to use evidence-based findings in subsequent investigations without further testing (Saunders *et al.*, 2009).

5. Conclusions

The value of the research is reflected both in two levels, theoretical and practical, as follows:

Theoretical conclusions' utility

- Note that investment project success is a complex issue dependent on many variables for the final determination of project success (Aaltonen, 2011).
- Investment project success and success factors are subjective to concepts and depend on who is the stakeholder of the project who evaluates them and the unit of time in which the projects are judged.
- In the effort to ensure the validity of the conclusions and the generalizability of research findings, investment projects were selected strategically that were varied in complexity and the degree of urgency for the organization carrying them out (Ahsan, 2010).

- The choice of the appropriate person concerned to the judgment of the project success and CSF has most of the literature background (Achtercamp, 2008) and the most important stakeholder to evaluate the project's success is the owner of the project, the project manager and the organization that finances (sponsor) the investment project.
- In SMEs the project manager of investment projects, the business owner and the sponsor of investments projects are the same persons.

Conclusions of practical applicability

The thorough research came up the creation of a framework of CSF that can be applied to guide the implementation of each project (co-funded or not). This pivot table of CSF can be used at the start of each investment project as a guide of success. There are many categories of users in whom the table of CSF can find practical utility such as: a) business owners' and project managers who implement investment projects, b) consultants who provide to guide to enterprises effective guidance to the successful implementation of investment projects, and c) program managers of the State which implement numerous projects.

Table 2. Checklist of Critical Success Factors in investment projects

	Checklist of CSF in investment projects
1	The degree of urgency that takes the investment project for the enterprise that implements the project
2	The project's alignment with the corporate strategy and the clarity of project's vision and objectives
3	The degree of satisfaction of customer's requirements by project's implementation
4	The knowledge of project's available resources (financial and technical)
5	The clear clarification from the start of the project of its mission to the involved parties in the project
6	The development of change - plans for the integration of changes in the project
7	The choice of a project manager and project team with high managerial skills
8	Support from the top management to the project team
9	Development of systems of control and monitoring of project implementation
10	Proper flow of information and communication among the stakeholders of the project
11	Application of project management tools (for example time – scheduling)
12	Taking into account the external environment of the project (environmental conditions, legislation, political environment, manufacturers and suppliers)
13	Degree of acceptance of project deliverables by the customer - the end user of the project

6. Limitations

The sample or the research was consisted only of enterprises which process and sell agricultural products and completed their investment plans in a Co-funded Regulation in Greece and not to global level. In spite of the small research sample' size ("12"), according to the research methodology saturation is caused in research and after this number the findings in qualitative studies are repeated. They are not differentiated and do not add anything new to the investigation. Another limitation is recognized in achieving directness in all semi-structured interviews, because eight (8) interviews were conducted face to face and four (4) by telephone. In all interviews the project manager of the investment plan and the business owner was the same person.

Acknowledgements

The Measure 2.1 in the Regulation 1257/99 has been applied successfully in Greece (including hundred of investment projects that have been implemented) for many years from 1999 until today. In particular this Regulation for Greece plays an important role and is of great importance due to the rural character of Greek economy.

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